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OPERATING INSTRUCTIONS

TYPE 874-Q9 ADAPTOR

PURPOSE.

The Type 874-Q9 Adaptor permits connection from standard 3/4-inch spaced Type 938 Binding Posts to GR874 Coaxial Connectors. This adaptor is used in the calibration of GR two-terminal capacitors that cannot be connected directly to a bridge.

DESCRIPTION (See Figure 1).

On one end the adaptor has a shielded banana plug and a ground link designed to fit around a Type 938 Binding Post; on the other end it has a GR874 coaxial connector.

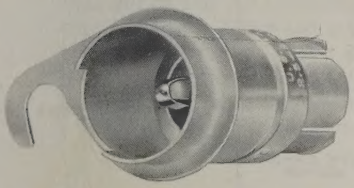

Figure 1.
Type 874-Q9 Adaptor.

CALIBRATION OF TWO-TERMINAL CAPACITORS.

To measure two-terminal capacitors, such as the Type 1419 Decade Capacitors and the Type 1422 Precision Capacitors, which cannot be plugged directly into the terminals of a bridge:

a. Plug the insulated terminal of the Type 874-Q9 Adaptor into the insulated (or high) binding post of the capacitor. Swing the ground link onto the ground (or low) binding post, and tighten the jack top to secure.

b. Using an appropriate coaxial patch cord, connect the adaptor-capacitor combination to the binding posts of a two-terminal capacitance bridge, such as a GR Type 716-C or Type 1615-A.

c. Measure the total capacitance of capacitor plus cable and adaptor.

d. Disconnect the adaptor-cable assembly from the capacitor.

e. Measure the capacitance of the cable-adaptor combination.

f. Subtract the capacitance measured in step e from the total measured in step c to determine capacitance added by the capacitor. This added capacitance is the value used in the General Radio Calibration of the total capacitance at the terminals of two-terminal Type 1422 Precision Capacitors.

THREE-TERMINAL CALIBRATION PROCEDURE.

For accurate measurement, lead capacitance must not change between or during measurements. The capacitance of typical coaxial cable may vary by 0.01 to 0.1 pF when the cable is moved. When capacitance errors of this order are important, as in the calibration of Type 1422 Precision Capacitors, either use rigid connectors or use the following three-terminal measurement method, which employs two Type 874-Q9 Adaptors, a Type 874-MB Coupling Probe, and a suitable three-terminal Capacitance bridge, such as the GR Type 1615-A, to exclude lead capacitance (See Figure 2):

a. Connect the Type 874-Q9 Adaptor to the capacitor as described above.

b. Insert the banana plug of another Type 874-Q9 Adaptor into

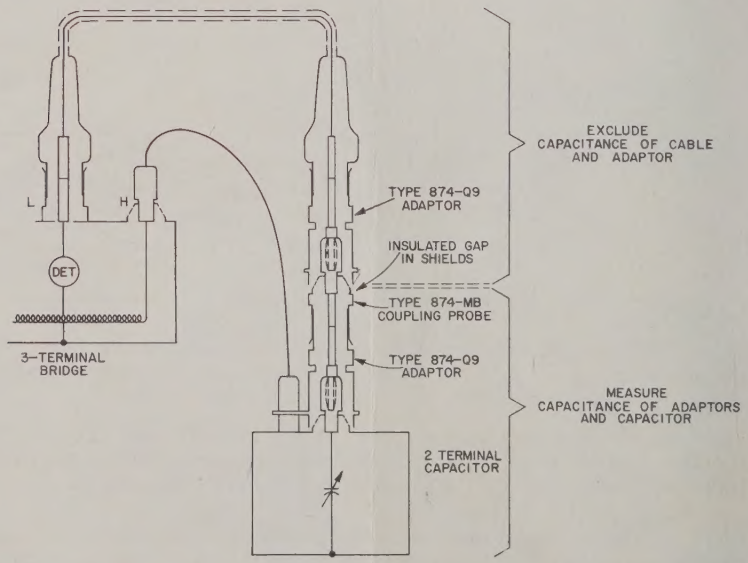

Figure -2. Connection for 3-terminal measurements on 2-terminal capacitors.

the binding post of a Type 874-MB Coupling Probe. Unscrew the head of the binding post to adjust its length until post and plug fit tightly together with a gap of about 1/16-inch between their shields. For additional rigidity, wrap the gap with electrical tape.

c. Connect one end of this assembly to the Type 874-Q9 adaptor that is connected to the capacitor.

d. Connect the other end of the assembly, through a coaxial patch cord, to the bridge "unknown" coaxial terminal that is at detector potential, and connect the shield of the patch cord to a guard terminal on the bridge.

e. Connect the shield of the lower Type 874-Q9, which is connected to the capacitor ground terminal, to the other bridge "unknown" terminal.

f. Measure the total capacitance of the capacitor plus the connectors. The capacitance measured by the bridge will be the capacitance from the high terminal to the case of the capacitor and the capacitance within the attached adaptor from the center conductors to the outer shields as far up as the gap. Capacitances from the center conductors to all shields on the bridge side of the gap are excluded.

g. Remove the capacitor from the adaptor to which it was connected and, with the same connections from the bridge to the adaptor center conductor and shields, measure the capacitance of the open adaptor.

h. Subtract this adaptor capacitance from the total to obtain the capacitance added by the capacitor.

> EXAMPLE: A Type 1422-D Precision Capacitor with its dial set at 100 pF is measured on a Type 1615-A Capacitance Bridge. When the adaptor assembly is connected to the capacitor, the bridge reads 105.01 pF. When the capacitor is removed from the adaptor, the measured capacitance of the open adaptor assembly is 4.98 pF. The capacitance added by the capacitor is 105.01 - 4.98 = 100.03 pF.

SPECIFICATIONS

Dimensions: Maximum diameter, 1 3/8 inches (35 mm); over-all length, 2 3/8 inches (61 mm).

Net Weight: 3 ounces (85 g).

Shipping Weight: 8 ounces (230 g).

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